

### Claims

1. A method for combining extents of a source data set, with minimal down time imposed on applications accessing the source data set, the source data set having a corresponding name, source DASD device(s) and one or more extent locations on the source DASD device(s), the method comprising the steps of:

- a) assessing the source data set to be migrated, the volume(s) it resides on, and the total space it occupies;
- b) allocating space for a corresponding target data set using the total source space as a primary allocation request and using the original source data set name;
- c) designating one or more target locations in the allocated space and assigning each source data set extent location to a respective one or more of the designated target locations;
- d) starting monitor programs on any images that can write to any of the identified source volumes in order to detect a subsequent change to the source data set;
- e) storing an indication of each source data set track detected by a monitor program as having changed;
- f) begin copying the source data set in accordance with said assignment of each source data set extent so as to form the corresponding target data set;
- g) while copying the source data set, periodically re-synchronizing source and target tracks detected by the monitor programs as having changed after having been previously copied;
- h) upon substantial completion of said copying, signaling the said application programs that closing the source data set is requested;
- i) recognizing that the source data set is closed thereby commencing a down time window;
- j) during the downtime window, finally re-synchronizing the source and target tracks detected by the monitor programs as having changed after having been previously copied;
- k) during the downtime window, accommodating allocation differences that occurred since the initial assessment of the source data set;

- l) changing catalog entries to reflect new target data set volumes; and
- m) signaling the application(s) that the target data set may be opened, thereby terminating the down time window.

2. A method according to claim 1 wherein said designating one or more target locations in the allocated space and assigning each source data set extent to a respective target location includes constructing a cylinder/track translate table having an entry for each extent of the source data set.

3. A method according to claim 1 wherein said accommodating allocation differences includes detecting and accommodating a persistent data set.

4. A method according to claim 1 wherein said accommodating allocation differences includes detecting and accommodating a new source data set added during the mirroring process.

5. A method according to claim 1 wherein said accommodating allocation differences includes detecting and accommodating a source data set deleted during the mirroring process.

6. A method according to claim 1 wherein said accommodating allocation differences includes detecting and accommodating extent changes to data sets included in the mirroring process.